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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,044	01/22/2004	Olivier Pizzuto	02-RO-250	3798

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EXAMINER	
KIM, SU C	

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/763,044	PIZZUTO ET AL.	
	Examiner	Art Unit	
	Su C. Kim	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *RCE filed on 2/2/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9-11,13-15,18 and 19* is/are rejected.

7)☒ Claim(s) *4,5,7,8,12,16 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

REMARK / ARGUMENT

1. In the response of advisory action mailed on 1/18/2006, applicant filed Request for Continued for Examination (RCE) on 2/2/2006. Now claims 1-19 are pending.

DETAILED ACTION

2. Claims 4 & 5 are objected to because of the following informalities: "DUV" is abbreviation of Deep Ultraviolet resin. The examiner suggests liberating in full terms or Deep Ultraviolet (DUV).

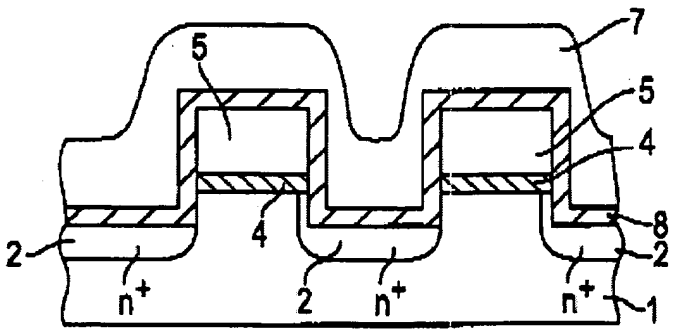
Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

FIG. 5C



Oyama discloses a method for producing a flash memory as claimed. **See all the FIGS** where Oyama teaches the following limitations

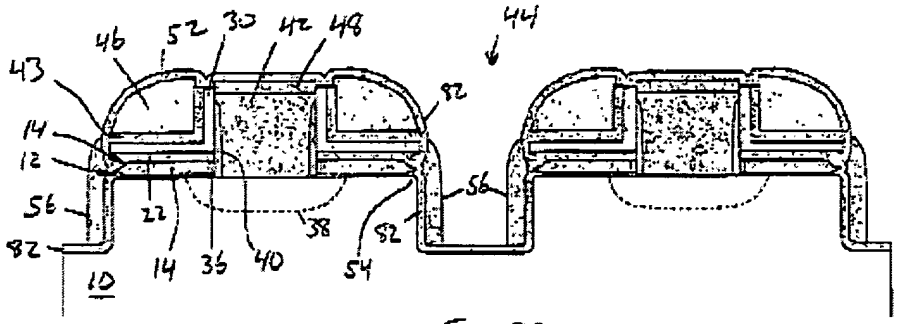


Fig 5D

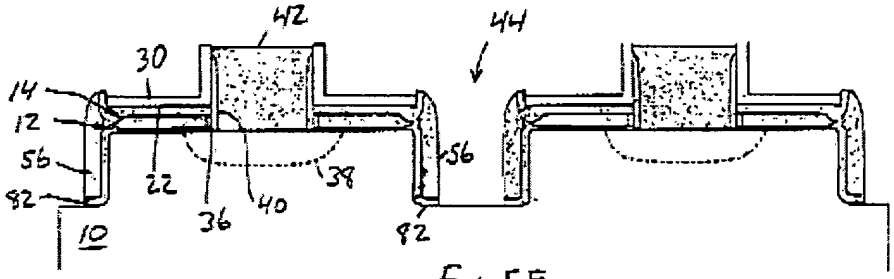


Fig 5E

Wang discloses a method of fabrication flash memory deviec as claimed. **See all the FIGS** where Wang teaches the following limitations

Claims 1, 2, 9, 13, 18, & 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyama (US 5880499) in view of Wang et al. (US 20030122185)

3. Pertaining claim 1, Oyama discloses a method for producing a flash memory comprising:

forming at least two adjacent rows of precursor stacks of floating gate transistor on a semiconductor substrate **1 (Fig 5 A)**, with the precursor stacks being at least partially covered by a protective resin **6** and being separated by a formation zone for a source line **2**;

forming a trench **2** in the formation zone for the source line by an attack of the formation zone **(Fig 5B, Oyama discloses etching to form trench)** and of the protective resin; and

implanting a source line in the formation zone with at least a portion of the source line extending directly below the precursor stacks **2 (Fig5 B)**.

Oyama fails to teach a deposit of residue from the protective resin below the precursor stacks and removing the deposit of residue.

Wang discloses a deposit of residue **52** from the protective resin below the precursor stacks and removing the deposit of residue. **(Fig 5A –5E, please note a deposition of oxide layer deposited in trench as shown in Fig. 5C and removal in Fig. 5E)** In view of Wang, it would have been obvious to one of ordinary skill in the art to

incorporate the process step of Wang into the Oyama because of shrinkage "the size of the memory cell arrays" **(Column 1 paragraph 06)**

4. Pertaining claim 2, Oyama discloses the method of claim 1, wherein the forming a trench includes forming a trench which is the type having a (SAS) self-aligned source **2 (Fig 5C)**.

5. Pertaining claim 9, Wang discloses the method of claim 1, wherein the removing the deposit of residue **52** includes removing the deposit of residue by generating dioxygen plasma **(Column 42, Please note RIE dry etching usually uses dioxygen plasma when oxide layer is removed).**

6. Pertaining claim 13, Oyama discloses the method of claim 1, further comprising; removing the protective resin **6** following implantation of the source line **(Fig 5B and Fig. 5C, please note protective photo resist removed after implantation)**.

7. Pertaining claim 18, Oyama discloses the method of claim 1, wherein the implanting the source line **2** Includes doping the source line with arsenic **(Fig 5B, AS is representing arsenic ion injection to form n+ region)**

8. Pertaining claim 19, Oyama discloses the implanting the source line includes implanting the source line 25 nanometers out from an edge under a gate oxide of the precursor stacks.

Given the teaching of the references, it would have been obvious to determine the optimum thickness, temperature as well as condition of delivery of the layers involved. *See In re Aller, Lacey and Hall* (10 USPQ 233-237) "It is not inventive to discover optimum or workable ranges by routine experimentation. Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. *In re Woodru* ; 919 f 2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Any differences in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)

Appellants have the burden of explaining the data in any declaration they proffer as evidence of non-obviousness. *Ex parte Ishizake*, 24 USPQ2d 1621, 1624 (Bd. Pat. App. & Inter. 1992).

An Affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. *In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979).

Claims 3-6,10-11, & 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyama (US 5880499) in view of Wang et al. (US 20030122185) and further in view of Choi et al. (US 6485895)

9. Pertaining claim 3,Oyama in view of Wang discloses to teach the forming a trench includes forming a trench so as to result in the protective resin **6** Oyama in view of Wang fails to teach the protective resin formed from a thick DUV resin. Choi discloses the protective resin **(Photoresist)** formed from a thick DUV resin **(Column 6 line 14-17).** In view of Choi, it would have been obvious to one of ordinary skill in the art to incorporate the process step of Choi into the Oyama in view of Wang because of "leading to a further reduction in smaller feature size" **(Column2 line 20-21)**

10. Pertaining claim 4, Oyama in view of Wang discloses to teach the forming a trench includes forming a trench so as to result in the protective resin **6** Oyama in view of Wang fails to teach the protective resin formed from a thick DUV resin. Choi discloses the protective resin **(Photoresist)** formed from a thick DUV resin **(Column 6 line 14-17).** In view of Choi, it would have been obvious to one of ordinary skill in the art to incorporate the process step of Choi into the Oyama in view of Wang because of "leading to a further reduction in smaller feature size" **(Column2 line 20-21)**

11. Pertaining claim 5, Oyama in view of Wang discloses to teach the forming a trench includes forming a trench so as to result in the protective resin **6** Oyama in view

of Wang fails to teach the protective resin formed from thick I-line resin. Choi discloses the protective resin **(Photoresist)** formed from thick I-line resin **(Column 6 line 14-17).** In view of Choi, it would have been obvious to one of ordinary skill in the art to incorporate the process step of Choi into the Oyama in view of Wang because of "leading to a further reduction in smaller feature size" **(Column2 line 20-21)**.

12. Pertaining claim 6, Oyama in view of Wang discloses to teach the forming a trench includes forming a trench so as to result in the protective resin **6** Oyama in view of Wang fails to teach the protective resin formed from thick I-line resin. Choi discloses the protective resin **(Photoresist)** formed from thick I-line resin **(Column 6 line 14-17).** In view of Choi, it would have been obvious to one of ordinary skill in the art to incorporate the process step of Choi into the Oyama in view of Wang because of "leading to a further reduction in smaller feature size" **(Column2 line 20-21)**.

13. Pertaining claim 10, Oyama discloses the method of claim 4, wherein the removing the deposit of residue includes removing the deposit of residue by generating dioxygen plasma **(Column 42, Please note RIE dry etching usually uses dioxygen plasma when oxide layer is removed).**

14. Pertaining claim 11, Wang discloses the method of claim 6, wherein the removing the deposit of residue **52** includes removing the deposit of residue by

generating dioxygen plasma **(Column 42, Please note RIE dry etching usually uses dioxygen plasma when oxide layer is removed)**.

15. Pertaining claim 14, Oyama discloses the method of claim 4, further comprising: removing the protective resin following implantation of the source line. **(Fig 5B and Fig. 5C, please note protective photo resist removed after implantation)**

16. Pertaining claim 15, Oyama discloses the method of claim 6, further comprising: removing the protective resin following implantation of the source line. **(Fig 5B and Fig. 5C, please note protective photo resist removed after implantation)**

Allowable Subject Matter

17. Claims 7, 8, 12, 16, & 17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Su C. Kim whose telephone number is (571) 272-5972. The examiner can normally be reached on Monday - Thursday, 9:00AM to 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Su C. Kim
04/13/2006

W. DAVID COLEMAN
PRIMARY EXAMINER